SEQUENCE LISTING

<110> Amylin Pharmaceuticals, Inc.
Baron, Alain et al.

<120> COMPOSITIONS FOR THE TREATMENT AND PREVENTION OF NEPHROPATHY

<130> 18528.675 (0218-UTL-9)

<140> 10/741,534
<141> 2003-12-19

<150> 10/740,146
<151> 2003-12-17

<150> 60/434,508
<151> 2002-12-17

<150> 60/434,888
<151> 2002-12-19

<160> 34

<170> PatentIn Ver. 3.2 and Microsoft Word

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<220>
<223> GLP-1 (7-36)

<220>
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<222> (30)..(30)
<223> AMIDATION, Arg at position 30 may optionally be Amidated

<400> 1

His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg
20 25 30

<210> 2
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<220>
<221> variant
<222> (1)..(1)
<223> 4-imidazopropionyl (des-amino-histidyl), 4-imidazoacetyl, or 4-imidazo-alpha, alpha dimethyl-acetyl

<220>
<221> variant
<222> (20)..(20)
<223> Lys or Arg

<220>
<221> variant
<222> (28)..(28)
<223> Lys at position 28 is optionally branched with a C6-C10 unbranched acyl group

<220>
<221> variant
<222> (31)..(31)
<223> Gly-OH or NH2

<400> 2

Xaa Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1 5 10 15

Gln Ala Ala Xaa Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Xaa
20 25 30

<210> 3
<211> 21
<212> PRT
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<223> artificial sequence with specific variable residues

<220>
<221> variant
<222> (1)..(1)
<223> X at position 1 is NH2, NH2-Ser, NH2-Val-Ser or NH2-Asp-Val-Ser

<220>
<221> variant
<222> (18)..(18)
<223> X at position 18 is Lys or Arg

<220>
<221> variant
<222> (21)..(21)
<223> X at position 21 is NH2, OH, Gly-NH2, or Gly-OH

<400> 3

Xaa Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu
1 5 10 15

Val Xaa Gly Arg Xaa
20

<210> 4
<211> 21
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<213> artificial sequence

<220>
<223> artificial sequence with specific variable residues

<220>
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<222> (1)..(1)
<223> NH2-Ser-Asp-Val-Ser

<220>
<221> variant
<222> (18)..(18)
<223> X at position 18 is Lys or Arg

<220>
<221> variant
<222> (21)..(21)
<223> X at position 21 is NH2, OH, Gly-NH2, or Gly-OH

<400> 4

Xaa Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu
1 5 10 15

Val Xaa Gly Arg Xaa
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<210> 5
<211> 21
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<223> X at position 1 is NH2-Thr-Ser-Asp-Val-Ser

<220>
<221> variant
<222> (18)..(18)
<223> X at position 18 is Lys or Arg

<220>
<221> variant
<222> (21)..(21)
<223> X at position 21 is NH2, OH, Gly-NH2, or Gly-OH

<400> 5

Xaa Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu
1 5 10 15

Val Xaa Gly Arg Xaa
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<210> 6
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<223> X at position 1 is NH2-Phe-Thr-Ser-Asp-Val-Ser

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<223> X at position 18 is Lys or Arg

<220>
<221> variant
<222> (21)..(21)
<223> X at position 21 is NH2, OH, Gly-NH2 or Gly-OH

<400> 6

Xaa Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu
1 5 10 15

Val Xaa Gly Arg Xaa
20

<210> 7
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<223> X at position 1 is NH2-Thr-Phe-Thr-Ser-Asp-Val-Ser

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<222> (18)..(18)
<223> X at position 1 is Lys or Arg

<220>
<221> variant
<222> (21)..(21)
<223> X at position 21 is NH2, OH, Gly-NH2 or Gly-OH

<400> 7

Xaa Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu
1 5 10 15

Val Xaa Gly Arg Xaa
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<210> 8
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<213> artificial sequence

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<222> (1)..(1)
<223> X at position 1 is NH2-Gly-Thr-Phe-Thr-Ser-Asp-Val-Ser

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<222> (18)..(18)
<223> X at position 18 is Lys or Arg

<220>
<221> variant
<222> (21)..(21)

<223> X at position 21 is NH2, OH, Gly-NH2 or Gly-OH

<400> 8

Xaa Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu
1 5 10 15

Val Xaa Gly Arg Xaa
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<223> X at position 1 is NH2-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Val-Ser

<220>
<221> variant
<222> (18)..(18)
<223> X at position 18 is Lys or Arg

<220>
<221> variant
<222> (21)..(21)
<223> X at position 21 is NH2, OH, Gly-NH2 or Gly-OH

<400> 9

Xaa Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu
1 5 10 15

Val Xaa Gly Arg Xaa
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<220>
<223> artificial sequence with specific variable residues

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<222> (1)..(1)
<223> X at position 1 is NH2-Ala-Glu-Gly-Thr-Phe-Thr-Ser-Asp-Val-Ser

<220>
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<222> (18)..(18)
<223> X at position 18 is Lys or Arg

<220>
<221> variant
<222> (21)..(21)
<223> X at position 21 is NH2, OH, Gly-NH2 or Gly-OH

<400> 10

Xaa Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu
1 5 10 15

Val Xaa Gly Arg Xaa
20

<210> 11
<211> 31
<212> PRT
<213> artificial sequence

<220>
<223> artificial sequence with specific variable residues

<220>
<221> variant
<222> (29)..(29)
<223> X at position 29, if GLP-1 (7-35) is Gly

<220>
<221> variant
<222> (30)..(30)
<223> X at position 29, if GLP-1 (7-36) is Gly-Arg

<220>
<221> variant
<222> (31)..(31)
<223> X at position 29, if GLP-1 (7-37) is Gly-Arg-Gly

<400> 11

His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Xaa Xaa Xaa
20 25 30

<210> 12
<211> 39
<212> PRT
<213> Heloderma horridum

<220>
<221> MOD_RES
<222> (39)
<223> AMIDATION, Position 39 is Ser-NH2

<400> 12

His Ser Asp Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
20 25 30

Ser Gly Ala Pro Pro Pro Ser
35

<210> 13
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial sequence with specific variable residues

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 13

Asp Leu Ser Lys Gln Met Glu Glu Glu Ala Val Arg Leu Phe Ile Glu
1 5 10 15

Trp Leu Lys Asn Gly Gly Pro Ser Ser Gly Ala Pro Pro Pro Ser
20 25 30

<210> 14
<211> 39
<212> PRT
<213> Heloderma suspectum

<220>
<221> MOD_RES
<222> (39)
<223> AMIDATION, Position 39 is Ser-NH2

<400> 14

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser
20 25 30

Ser Gly Ala Pro Pro Pro Ser
35

<210> 15
<211> 38
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial sequence with specific variable residues

<400> 15

His Ser Asp Ala Thr Phe Thr Ala Glu Tyr Ser Lys Leu Leu Ala Lys
1 5 10 15

Leu Ala Leu Gln Lys Tyr Leu Glu Ser Ile Leu Gly Ser Ser Thr Ser
20 25 30

Pro Arg Pro Pro Ser Ser
35

<210> 16
<211> 37
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial sequence with specific variable residues

<400> 16

His Ser Asp Ala Thr Phe Thr Ala Glu Tyr Ser Lys Leu Leu Ala Lys
1 5 10 15

Leu Ala Leu Gln Lys Tyr Leu Glu Ser Ile Leu Gly Ser Ser Thr Ser
20 25 30

Pro Arg Pro Pro Ser
35

<210> 17

<211> 35
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial sequence with specific variable residues

<220>
<221> MOD_RES
<222> (35)..(35)
<223> AMIDATION

<400> 17

His Ser Asp Ala Ile Phe Thr Glu Glu Tyr Ser Lys Leu Leu Ala Lys
1 5 10 15

Leu Ala Leu Gln Lys Tyr Leu Ala Ser Ile Leu Gly Ser Arg Thr Ser
20 25 30

Pro Pro Pro
35

<210> 18
<211> 35
<212> PRT
<213> Artificial Sequence

<220>
<223> artificial sequence with specific variable residues

<220>
<221> MOD_RES
<222> (35)..(35)
<223> AMIDATION

<400> 18

His Ser Asp Ala Ile Phe Thr Gln Gln Tyr Ser Lys Leu Leu Ala Lys
1 5 10 15

Leu Ala Leu Gln Lys Tyr Leu Ala Ser Ile Leu Gly Ser Arg Thr Ser
20 25 30

Pro Pro Pro
35

<210> 19

<211> 30
<212> PRT
<213> Artificial sequence

<220>
<223> Exendin-4 (1-30)

<400> 19

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly
20 25 30

<210> 20
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<212> PRT
<213> Artificial sequence

<220>
<223> Exendin-4 (1-30) Amide

<220>
<221> Variant
<222> (30)..(30)
<223> Gly-NH2

<400> 20

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly
20 25 30

<210> 21
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Exendin-4 (1-28) Amide

<220>
<221> Variant
<222> (28)..(28)
<223> Asn-NH2

<400> 21

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn
20 25

<210> 22
<211> 39
<212> PRT
<213> Artificial sequence

<220>
<223> 14-Leu, 25-Phe form of exendin-4

<220>
<221> variant
<222> (39)..(39)
<223> Ser-NH2

<400> 22

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn Gly Gly Pro Ser
20 25 30

Ser Gly Ala Pro Pro Pro Ser
35

<210> 23
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<220>
<223> Truncated form of 14-leu, 25-Phe exendin-4

<220>
<221> Variant
<222> (28)..(28)
<223> Asn-NH2

<400> 23

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu

1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Phe Leu Lys Asn
20 25

<210> 24
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<213> Artificial Sequence

<220>
<223> 14-Leu, 22-Ala, 25-Phe form of exendin-4(1-28)

<220>
<221> variant
<222> (28)..(28)
<223> Asn-NH2

<400> 24

His Gly Glu Gly Thr Phe Thr Ser Asp Leu Ser Lys Gln Leu Glu Glu
1 5 10 15

Glu Ala Val Arg Leu Ala Ile Glu Phe Leu Lys Asn
20 25

<210> 25
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<220>
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<223> His, Arg or Tyr

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<221> Variant
<222> (2)..(2)
<223> Ser, Gly, Ala or Thr

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<222> (3)..(3)
<223> Asp or Glu

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<222> (5)..(5)
<223> Ala or Thr

<220>
<221> Variant
<222> (6)..(6)
<223> Ala, Phe, Tyr or naphthylalanine

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<221> Variant
<222> (7)..(7)
<223> Thr or Ser

<220>
<221> Variant
<222> (8)..(8)
<223> Ala, Ser or Thr

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<222> (9)..(9)
<223> Asp or Glu

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<222> (10)..(10)
<223> Ala, Leu, Ile, Val, pentylglycine or Met

<220>
<221> Variant
<222> (11)..(11)
<223> Ala or Ser

<220>
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<222> (12)..(12)
<223> Ala or Lys

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<221> Variant
<222> (13)..(13)
<223> Ala or Gln

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<221> Variant
<222> (14)..(14)
<223> Ala, Leu, Ile, Val, pentylglycine, Val or Met

<220>
<221> Variant
<222> (15)..(17)
<223> Ala or Glu

<220>

<221> Variant
<222> (19)..(19)
<223> Ala or Val

<220>
<221> Variant
<222> (20)..(20)
<223> Ala or Arg

<220>
<221> Variant
<222> (21)..(21)
<223> Ala or Leu

<220>
<221> Variant
<222> (22)..(22)
<223> Ala, Phe, Tyr or naphthylalanine

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<222> (23)..(23)
<223> Ile, Val, Leu, pentylglycine, tert-butylglycine or Met

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<222> (24)..(24)
<223> Ala, Glu or Asp

<220>
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<222> (25)..(25)
<223> Ala, Trp, Phe, Tyr or naphthylalanine

<220>
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<222> (26)..(26)
<223> Ala or Leu

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<222> (27)..(27)
<223> Ala or Lys

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<222> (28)..(28)
<223> Ala or Asn

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<221> Variant
<222> (29)..(29)
<223> OH, NH2, Gly-OH, Gly-N2, Gly-Gly-OH, Gly-Gly-NH2, and further as indicated in the specification

<400> 25

Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20 25

<210> 26
<211> 29
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<213> Artificial Sequence

<220>
<223> Formula IV: Artificial sequence with specific variable residues

<220>
<221> Variant
<222> (1)..(1)
<223> His, Arg, Tyr, Ala, Norval, Val or Norleu

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<221> Variant
<222> (2)..(2)
<223> Ser, Gly, Ala or Thr

<220>
<221> Variant
<222> (3)..(3)
<223> Ala, Asp or Glu

<220>
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<222> (4)..(4)
<223> Ala, Norval, Val, Norleu or Gly

<220>
<221> Variant
<222> (5)..(5)
<223> Ala or Thr

<220>
<221> Variant
<222> (6)..(6)
<223> Phe, Tyr or naphthylalanine

<220>
<221> Variant
<222> (7)..(7)
<223> Thr or Ser

<220>
<221> Variant
<222> (8)..(8)

<223> Ala, Ser or Thr

<220>
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<222> (9)..(9)
<223> Ala, Norval, Val, Norleu, Asp or Glu

<220>
<221> Variant
<222> (10)..(10)
<223> Ala, Leu, Ile, Val, pentylglycine or Met

<220>
<221> Variant
<222> (11)..(11)
<223> Ala or Ser

<220>
<221> Variant
<222> (12)..(12)
<223> Ala or Lys

<220>
<221> Variant
<222> (13)..(13)
<223> Ala or Gln

<220>
<221> Variant
<222> (14)..(14)
<223> Ala, Leu, Ile, pentylglycine, Val or Met

<220>
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<222> (15)..(17)
<223> Ala or Glu

<220>
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<222> (19)..(19)
<223> Ala or Val

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<222> (20)..(20)
<223> Ala or Arg

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<221> Variant
<222> (21)..(21)
<223> Ala or Leu

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<222> (22)..(22)
<223> Phe, Tyr or naphthylalanine

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<221> Variant
<222> (23)..(23)
<223> Ile, Val, Leu, pentylglycine, tert-butylglycine or Met

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<222> (24)..(24)
<223> Ala, Glu or Asp

<220>
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<222> (25)..(25)
<223> Ala, Trp, Phe, Tyr or naphthylalanine

<220>
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<222> (26)..(26)
<223> Ala or Leu

<220>
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<222> (27)..(27)
<223> Ala or Lys

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<222> (28)..(28)
<223> Ala or Asn

<220>
<221> Variant
<222> (29)..(29)
<223> OH, NH2, Gly-OH, Gly-NH2, Gly-Gly-OH, Gly-Gly-NH2, and further as indicated in the specification

<400> 26

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20 25

<210> 27
<211> 29
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<220>
<223> Formula V: Artificial sequence with specific variable residues

<220>
<221> VARIANT
<222> (1)..(1)
<223> His or Arg

<220>
<221> VARIANT
<222> (2)..(2)
<223> Gly or Ala

<220>
<221> VARIANT
<222> (3)..(3)
<223> Asp or Glu

<220>
<221> VARIANT
<222> (5)..(5)
<223> Ala or Thr

<220>
<221> VARIANT
<222> (6)..(6)
<223> Ala, Phe or naphthalanine

<220>
<221> VARIANT
<222> (7)..(7)
<223> Thr or Ser

<220>
<221> VARIANT
<222> (8)..(8)
<223> Ala, Ser or Thr

<220>
<221> VARIANT
<222> (9)..(9)
<223> Asp or Glu

<220>
<221> VARIANT
<222> (10)..(10)
<223> Ala, Leu or pentylglycine

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<222> (11)..(11)
<223> Ala or Ser

<220>
<221> VARIANT
<222> (12)..(12)
<223> Ala or Lys

<220>

<221> VARIANT
<222> (13)..(13)
<223> Ala or Gln

<220>
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<222> (14)..(14)
<223> Ala, Leu or pentylglycine

<220>
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<222> (15)..(17)
<223> Ala or Glu

<220>
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<222> (19)..(19)
<223> Ala or Val

<220>
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<222> (20)..(20)
<223> Ala or Arg

<220>
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<222> (21)..(21)
<223> Ala or Leu

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<222> (22)..(22)
<223> Phe or naphthylalanine

<220>
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<222> (23)..(23)
<223> Ile, Val or tert-butylglycine

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<221> VARIANT
<222> (24)..(24)
<223> Ala, Glu or Asp

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<222> (25)..(25)
<223> Ala, Trp or Phe

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<222> (26)..(26)
<223> Ala or Leu

<220>
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<222> (27)..(27)
<223> Ala or Lys

<220>
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<222> (28)..(28)
<223> Ala or Asn

<220>
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<222> (29)..(29)
<223> -OH, -NH2, Gly-OH, Gly-NH2, Gly Gly-ON, Gly Gly-NH2 and further as indicated in the specification

<400> 27

Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20 25

<210> 28
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<220>
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<223> His or Ala

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<222> (2)..(2)
<223> Gly or Ala

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<221> VARIANT
<222> (3)..(3)
<223> Ala, Asp or Glu

<220>
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<222> (4)..(4)
<223> Ala or Gly

<220>
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<222> (5)..(5)

<223> Ala or Thr

<220>
<221> VARIANT
<222> (6)..(6)
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<222> (7)..(7)
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<222> (8)..(8)
<223> Ala, Ser or Thr

<220>
<221> VARIANT
<222> (9)..(9)
<223> Ala, Asp or Glu

<220>
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<222> (10)..(10)
<223> Ala, Leu or pentylglycine

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<222> (11)..(11)
<223> Ala or Ser

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<222> (12)..(12)
<223> Ala or Lys

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<222> (13)..(13)
<223> Ala or Gln

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<222> (14)..(14)
<223> Ala, Leu, Met or pentylglycine

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<222> (15)..(17)
<223> Ala or Glu

<220>
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<222> (19)..(19)
<223> Ala or Val

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<222> (20)..(20)
<223> Ala or Arg

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<222> (21)..(21)
<223> Ala or Leu

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<222> (22)..(22)
<223> Phe or naphthylalanine

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<221> VARIANT
<222> (23)..(23)
<223> Ile, Val or tert-butylglycine

<220>
<221> VARIANT
<222> (24)..(24)
<223> Ala, Glu or Asp

<220>
<221> VARIANT
<222> (25)..(25)
<223> Ala, Trp or Phe

<220>
<221> VARIANT
<222> (26)..(26)
<223> Ala or Leu

<220>
<221> VARIANT
<222> (27)..(27)
<223> Ala or Lys

<220>
<221> VARIANT
<222> (28)..(28)
<223> Ala or Asn

<220>
<221> VARIANT
<222> (29)..(29)
<223> -OH, -NH2, Gly-OH, Gly-NH2, Gly Gly-ON, Gly Gly-NH2 and further as indicated in the specification

<400> 28

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20 25

<210> 29
<211> 28
<212> PRT
<213> Artificial Sequence

<220>
<223> Formula VII: Artificial sequence with specific variable residues

<220>
<221> VARIANT
<222> (1)..(1)
<223> His, Arg, Tyr or 4-imidazopropionyl

<220>
<221> VARIANT
<222> (2)..(2)
<223> Ser, Gly, Ala or Thr

<220>
<221> VARIANT
<222> (3)..(3)
<223> Asp or Glu

<220>
<221> VARIANT
<222> (5)..(5)
<223> Ala or Thr

<220>
<221> VARIANT
<222> (6)..(6)
<223> Ala, Phe, Tyr or naphthylalanine

<220>
<221> VARIANT
<222> (7)..(7)
<223> Thr or Ser

<220>
<221> VARIANT
<222> (8)..(8)
<223> Ala, Ser or Thr

<220>
<221> VARIANT
<222> (9)..(9)
<223> Asp or Glu

<220>

<221> VARIANT
<222> (10)..(10)
<223> Ala, Leu, Ile, Val, pentylglycine or Met

<220>
<221> VARIANT
<222> (11)..(11)
<223> Ala or Ser

<220>
<221> VARIANT
<222> (12)..(12)
<223> Ala or Lys

<220>
<221> VARIANT
<222> (13)..(13)
<223> Ala or Gln

<220>
<221> VARIANT
<222> (14)..(14)
<223> Ala, Leu, Ile, pentylglycine, Val or Met

<220>
<221> VARIANT
<222> (15)..(17)
<223> Ala or Glu

<220>
<221> VARIANT
<222> (19)..(19)
<223> Ala or Val

<220>
<221> VARIANT
<222> (20)..(20)
<223> Ala or Arg

<220>
<221> VARIANT
<222> (21)..(21)
<223> Ala, Leu or Lys-NH.Sigma.-R, where R is Lys, Arg, C1-C10 straight-chain or branched alkanoyl or cycloalkanoyl

<220>
<221> VARIANT
<222> (22)..(22)
<223> Phe, Tyr or naphthylalanine

<220>
<221> VARIANT
<222> (23)..(23)
<223> Ile, Val, Leu, pentylglycine, tert-butylglycine or Met

<220>

<221> VARIANT
<222> (24)..(24)
<223> Ala, Glu or Asp

<220>
<221> VARIANT
<222> (25)..(25)
<223> Ala, Trp, Phe, Tyr or naphthylalanine

<220>
<221> VARIANT
<222> (26)..(26)
<223> Ala or Leu

<220>
<221> VARIANT
<222> (27)..(27)
<223> Lys Asn, Asn Lys, Lys-NH.Sigma.-R Asn, Asn Lys-NH.Sigma.-R, Lys-NH.Sigma.-R Ala, Ala Lys-NH.Sigma.-R where R is Lys, Arg, C1-C10 straight-chain or branched alkanoyl or cycloalkylalkanoyl

<220>
<221> VARIANT
<222> (28)..(28)
<223> -OH, -NH2, Gly-OH, Gly-NH2, Gly Gly-ON, Gly Gly-NH2 and further as indicated in the specification

<400> 29

Xaa Xaa Xaa Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20 25

<210> 30
<211> 29
<212> PRT
<213> Artificial sequence

<220>
<223> Formula VIII: Artificial sequence with specific variable residues

<220>
<221> VARIANT
<222> (1)..(1)
<223> His, Arg, Tyr, Ala, Norvaline, Val, Norleucine or 4imidazopropionyl

<220>
<221> VARIANT
<222> (2)..(2)
<223> Ser, Gly, Ala or Thr

<220>
<221> VARIANT
<222> (3)..(3)
<223> Ala, Asp or Glu

<220>
<221> VARIANT
<222> (4)..(4)
<223> Ala, Norvaline, Val, Norleucine or Gly

<220>
<221> VARIANT
<222> (5)..(5)
<223> Ala or Thr

<220>
<221> VARIANT
<222> (6)..(6)
<223> Phe, Tyr or naphthylalanine

<220>
<221> VARIANT
<222> (7)..(7)
<223> Thr or Ser

<220>
<221> VARIANT
<222> (8)..(8)
<223> Ala, Ser or Thr

<220>
<221> VARIANT
<222> (9)..(9)
<223> Ala, Noraline, Val, Norleucine, Asp or Glu

<220>
<221> VARIANT
<222> (10)..(10)
<223> Ala, Leu, Ile, Val, pentylglycine or Met

<220>
<221> VARIANT
<222> (11)..(11)
<223> Ala or Ser

<220>
<221> VARIANT
<222> (12)..(12)
<223> Ala or Lys

<220>
<221> VARIANT
<222> (13)..(13)
<223> Ala or Gln

<220>
<221> VARIANT
<222> (14)..(14)
<223> Ala, Leu, Ile, pentylglycine, Val or Met

<220>
<221> VARIANT
<222> (15)..(17)
<223> Ala or Glu

<220>
<221> VARIANT
<222> (19)..(19)
<223> Ala or Val

<220>
<221> VARIANT
<222> (20)..(20)
<223> Ala or Arg

<220>
<221> VARIANT
<222> (21)..(21)
<223> Ala, Leu or Lys-NH.Sigma.-R where R is Lys, Arg, C1-10 straight-chain or branched alkanoyl or cycloalleyl-alkanoyl

<220>
<221> VARIANT
<222> (22)..(22)
<223> Phe, Tyr or naphthylalanine

<220>
<221> VARIANT
<222> (23)..(23)
<223> Ile, Val, Leu, pentylglycine, tert-butylglycine or Met

<220>
<221> VARIANT
<222> (24)..(24)
<223> Ala, Glu or Asp

<220>
<221> VARIANT
<222> (25)..(25)
<223> Ala, Trp, Phe, Tyr or naphthylalanine

<220>
<221> VARIANT
<222> (26)..(26)
<223> Ala or Leu

<220>
<221> VARIANT
<222> (27)..(27)
<223> Lys Asn, Asn Lys, Lys-NH.Sigma.-R Asn, Asn Lys-NH.Sigma.-R, Lys-NH.Sigma.-R Ala, Ala Lys-NH.Sigma.-R where R is Lys, Arg, C1-C10

straight-chain or branched alkanoyl or cycloalkylalkanoyl

<220>
<221> VARIANT
<222> (28)..(28)
<223> -OH, -NH2, Gly-OH, Gly-NH2, Gly Gly-ON, Gly Gly-NH2 and further as indicated in the specification

<400> 30

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Ala Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
20 25

<210> 31
<211> 39
<212> PRT
<213> Artificial sequence

<220>
<223> Formula IX: artificial sequence with specific variable residues

<220>
<221> VARIANT
<222> (1)..(1)
<223> His, Arg or Tyr

<220>
<221> VARIANT
<222> (2)..(2)
<223> Ser, Gly, Ala or Thr

<220>
<221> VARIANT
<222> (3)..(3)
<223> Asp or Glu

<220>
<221> VARIANT
<222> (6)..(6)
<223> Phe, Tyr or naphthylalanine

<220>
<221> VARIANT
<222> (7)..(7)
<223> Thr or Ser

<220>
<221> VARIANT
<222> (8)..(8)
<223> Thr or Ser

<220>
<221> VARIANT
<222> (9)..(9)
<223> Asp or Glu

<220>
<221> VARIANT
<222> (10)..(10)
<223> Leu, Ile, Val, pentylglycine or Met

<220>
<221> VARIANT
<222> (14)..(14)
<223> Leu, Ile, pentylglycine, Val or Met

<220>
<221> VARIANT
<222> (22)..(22)
<223> Phe, Tyr or naphthylalanine

<220>
<221> VARIANT
<222> (23)..(23)
<223> Ile, Val, Leu, pentylglycine, tert-butylglycine or Met

<220>
<221> VARIANT
<222> (24)..(24)
<223> Glu or Asp

<220>
<221> VARIANT
<222> (25)..(25)
<223> Trp, Phe, Tyr or naphthylalanine

<220>
<221> VARIANT
<222> (31)..(31)
<223> Pro, homoproline, 3Hyp, 4Hyp, thioproline, N-alkylglycine,
N-alkylpentylglycine or N-alkylalanine

<220>
<221> VARIANT
<222> (36)..(38)
<223> Pro, homoproline, 3Hyp, 4Hyp, thioproline, N-alkylglycine,
N-alkylpentylglycine or N-alkylalanine

<220>
<221> VARIANT
<222> (39)..(39)
<223> Ser-OH, Ser-NH2, Thr-OH, Thr-NH2, Tyr-OH or Tyr-NH2

<400> 31

Xaa Xaa Xaa Gly Thr Xaa Xaa Xaa Xaa Xaa Ser Lys Gln Xaa Glu Glu

1 5 10 15

Glu Ala Val Arg Leu Xaa Xaa Xaa Xaa Leu Lys Asn Gly Gly Xaa Ser
20 25 30

Ser Gly Ala Xaa Xaa Xaa Xaa
35

<210> 32
<211> 38
<212> PRT
<213> Artificial sequence

<220>
<223> Formula X: artificial sequence with specific variable residues

<220>
<221> VARIANT
<222> (1)..(1)
<223> His, Arg, Tyr or 4-imidazopropionyl

<220>
<221> VARIANT
<222> (2)..(2)
<223> Ser, Gly, Ala or Thr

<220>
<221> VARIANT
<222> (3)..(3)
<223> Asp or Glu

<220>
<221> VARIANT
<222> (6)..(6)
<223> Phe, Tyr or naphthylalanine

<220>
<221> VARIANT
<222> (7)..(7)
<223> Thr or Ser

<220>
<221> VARIANT
<222> (8)..(8)
<223> Ser or Thr

<220>
<221> VARIANT
<222> (9)..(9)
<223> Asp or Glu

<220>

<221> VARIANT
<222> (10)..(10)
<223> Leu, Ile, Val, pentylglycine or Met

<220>
<221> VARIANT
<222> (14)..(14)
<223> Leu, Ile, pentylglycine, Val or Met

<220>
<221> VARIANT
<222> (22)..(22)
<223> Phe, Tyr or naphthylalanine

<220>
<221> VARIANT
<222> (23)..(23)
<223> Ile, Val, Leu, pentylglycine, tert-butylglycine or Met

<220>
<221> VARIANT
<222> (24)..(24)
<223> Glu or Asp

<220>
<221> VARIANT
<222> (25)..(25)
<223> Trp, Phe, Tyr or naphthylalanine

<220>
<221> VARIANT
<222> (27)..(27)
<223> Lys, Asn, Asn, Lys, Lys-NH.Sigma.-R Asn, Asn, Lys-NH.Sigma.-R where R is Lys, Arg, C1-C10 straight-chain or branched alkanoyl or cycloalkylalkanoyl

<220>
<221> VARIANT
<222> (30)..(30)
<223> Pro, homoproline, 3Hyp, 4Hyp, thioproline, N-alkylglycine, N-alkylpentylglcyine or N-alkylalanine

<220>
<221> VARIANT
<222> (35)..(37)
<223> Pro, homoproline, 3Hyp, 4Hyp, thioproline, N-alkylglycine, N-alkylpentylglcyine or N-alkylalanine

<220>
<221> VARIANT
<222> (38)..(38)
<223> Ser-OH, Ser-NH2, Thr-OH, Thr-NH2, Tyr-OH or Tyr-NH2

<400> 32

Xaa Xaa Xaa Gly Thr Xaa Xaa Xaa Xaa Xaa Ser Lys Gln Xaa Glu Glu

1 5 10 15

Glu Ala Val Arg Leu Xaa Xaa Xaa Xaa Leu Xaa Gly Gly Xaa Ser Ser
20 25 30

Gly Ala Xaa Xaa Xaa Xaa
35

<210> 33
<211> 31
<212> PRT
<213> artificial sequence

<220>
<223> Formula XI: artificial sequence with specific variable residues

<220>
<221> VARIANT
<222> (1)..(1)
<223> X is His, D-His, desamino-His, 2-amino-His, beta.hydroxy-His, homo-His, alpha-fluoromethyl-His, or alpha-methyl-His

<220>
<221> VARIANT
<222> (2)..(2)
<223> X is Met, Asp, Lys, Thr, Leu, Asn, Gln, Phe, Val or Tyr

<220>
<221> VARIANT
<222> (15)..(15)
<223> X is Glu, Gln, Ala, Thr, Ser or Gly

<220>
<221> VARIANT
<222> (21)..(21)
<223> X is Glu, Gln, Ala, Thr, Ser or Gly

<220>
<221> VARIANT
<222> (31)..(31)
<223> X is NH2 or Gly-OH, provided that if X at position 1 is His, X at position 2 is Val, X at position 15 is Glu and X at position 21 is Glu, then X at position 31 is NH2

<400> 33

Xaa Xaa Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Xaa Gly
1 5 10 15

Gln Ala Ala Lys Xaa Phe Ile Ala Trp Leu Val Lys Gly Arg Xaa
20 25 30

<210> 34
<211> 31
<212> PRT
<213> artificial sequence

<220>
<223> Formula XII: artificial sequence with specific varibale residues

<220>
<221> variant
<222> (1)..(1)
<223> X is His, D-His, desamino-His, 2-amino-His, beta.hydroxy-His, homo-His, alpha-fluoromethyl-His, or alpha-methyl-His

<220>
<221> variant
<222> (2)..(2)
<223> X is Ala, Gly, Val, Thr, Ile, or alpha-methyl-Ala

<220>
<221> variant
<222> (15)..(15)
<223> X is Glu, Gln, Ala, Thr, Ser or Gly

<220>
<221> variant
<222> (21)..(21)
<223> X is Glu, Gln, Ala, Thr, Ser or Gly

<220>
<221> variant
<222> (31)..(31)
<223> X is

<220>
<221> variant
<222> (31)..(31)
<223> X is NH2 or Gly-OH, providing that the compound has an isoelectric point in the range from about 6.0 to about 9.0 and further providing that when X at position 1 is His, X at position 2 is Ala, X at position 15 is Glu and X at position 21 is Glu, X

<400> 34

Xaa Xaa Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Xaa Gly
1 5 10 15

Gln Ala Ala Lys Xaa Phe Ile Ala Trp Leu Val Lys Gly Arg Xaa
20 25 30